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CLINICAL NOTE

SPLINT FOR DE QUERVAIN DISEASE: A NEW DESIGN

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Design of the New Splint

The purpose of a splint for de Quervain (DQV) disease is to immobilise the carpometacarpal joint (CMCJ) and metacarpophalangeal joint (MCPJ) of the thumb to stabilise the abductor pollicis longus and the extensor pollicis brevis (Lee, Nasser-Sharif, & Zelouf, 2002). There are two common traditional types of splints for DQV disease currently used in Hong Kong: the resting splint and working splint. The resting splint is usually made of thermoplastic material of 2 mm or 2.5 mm thickness. The working splint is usually made of neoprene with a plastic insert.

For the resting splint, some DQV patients have complained that the splints were too hard and they felt pain over the radial styloid and/or thumb MCPJ. For the working splint, some patients felt too hot with the material, and even developed a skin allergy. Comparison of the old and new designs of the DQV disease splint is shown in the Table (see also Figures 1 and 2).

The main concerns for designing a new type of splint are (a) freeing the pressure points of the radial styloid and thumb MCPJ; (b) avoiding using neoprene or similar materials; (c) making the splint as light as possible; and (d) one splint needing to serve two purposes, that is resting and working (Figure 3).

Table. Comparison of old and new splints for DQV disease

	Old design (resting splint)	New design (resting and working splint)
Fabrication time[a]	~ 8 min with pre-cut thermoplastic material	~ 5 min with pre-cut thermoplastic material (60% faster)
Material cost (based on medium sized adult)	~264 cm^2	~122.5 cm^2 (saves 115% of thermoplastic material)
Ease of making	Different hand sizes need different sizes of splint pattern	One universal pattern can fit different sizes of hand (Figure 1)
	Drawing splint pattern needs accurate location of the thumb IPJ and palm crease	First web can be easily noted to draw the pattern (Figure 2)
	Moulding splint contour should be fitted accurately	Required skill is less for moulding splint, because size can be easily adjusted by Velcro
	Time is needed to mould the thumb part accurately to free the IPJ	Easy to cut the material to free the thumb IPJ
	There is a need to be aware of pressure points of the radial styloid, thumb MCPJ, and first web	Pressure points of radial styloid, thumb MCPJ, and first web are free

[a]Assuming the therapist is skilful in fabrication of these two splints. IPJ = interphalangeal joint; MCPJ = metacarpophalangeal joint.

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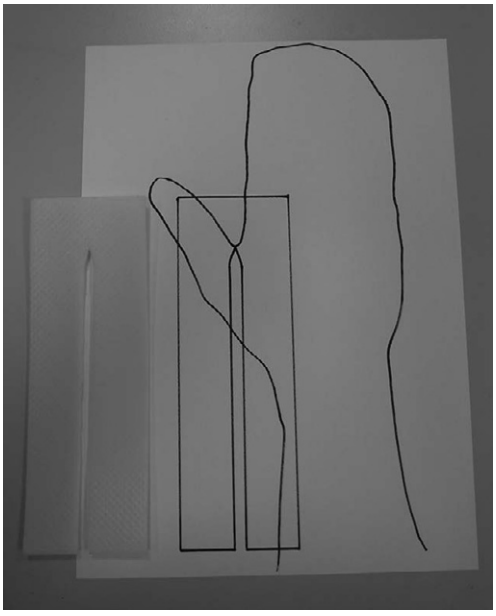

Figure 1. *Preparation for fabrication.*

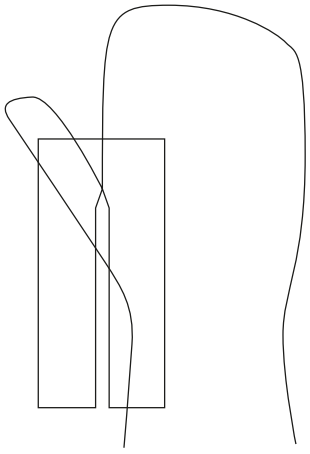

Figure 2. *New pattern of splint.*

Figure 3. *Finished product (materials: 2 mm or 2.5 mm Orfit, and sewn Velcro).*

Advantages of the new splint for patients are (a) freeing of pressure points of the radial styloid and thumb MCPJ; (b) comfort; and (c) ease of wear and cleaning. Advantages for therapists include (a) easy fabrication; (b) saving of time and splinting materials; (c) an alternative choice for traditional design; and (d) one splint for dual purposes.

References

Lee, M., P., Nasser-Sharif, S., & Zelouf, D. S. (2002). *Surgeon's and therapist's management of tendonopathies in the hand and wrist*. In E. Mackin, A. Callahan, A. Osterman, T. Skirven, L. Schneider, & J. Hunter (Eds.), *Hunter, Mackin & Callahan's rehabilitation of the hand and upper extremity* (pp. 944–947). St. Louis, MO: Mosby.